

Integrate Partial Hydrolyzed Guar Gum in Post-operative Ileostomy Nutritional Management

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Abstract

Objective: This case report aimed to share our clinical practice about the partially hydrolyzed guar gum (PHGG) incorporation in conventional ileostomy management. **Case Report:** Patients A and B, who diagnosed with diabetic mellitus and hypertension rectosigmoid adenocarcinoma Stage III, had high stoma output after anterior resection with covering ileostomy (more than 1200 ml/day). PHGG was integrated into nutritional management and showed a positive effect in normalizing volume and the consistency of ileostomy stoma output. **Discussion:** Post-operative ileostomy patients often faced a higher risk for malnutrition among cancer patients. Persistent high stoma output without proper management could cause dehydration, depletion of magnesium and sodium, acute renal injury, and malnutrition. High-protein and high calories normal diet would normally be prescribed to post-operative colorectal cancer patients with an ileostomy. The addition of PHGG showed a positive effect in improving ileostomy consistency and output. **Conclusion:** The PHGG incorporation in the post-operative nutritional management for ileostomy revealed positive outcomes in consistency and volume of stoma output and nutritional intake.

Keywords: Ileostomy, Nutritional management, Partially hydrolyzed guar gum, Post-operative

Introduction

Post-operative colorectal cancer patients with covering ileostomy often faced a risk of malnutrition because of resection of the colon and high output of stoma in the early post-operative stage.^[1,2] The poor management of high-output stomas could cause dehydration, acute kidney injury, and malnutrition.^[1] Partially hydrolyzed guar gum (PHGG) is known as a prebiotic fiber which is water-soluble, colorless, taste-free, and stable at a low pH, heat tolerant. PHGG was recognized as competent management in the acute diarrhea treatment in an intensive care setting.^[3] This case series aimed to share our clinical practice about the PHGG incorporation in conventional ileostomy management. This case series was registered with National Malaysia Research Registration with research identification number NMRR-19-3056-51609.

Case Report

Patient A, a 70-year-old male, with comorbid of diabetic mellitus and hypertension, was diagnosed for a rectosigmoid adenocarcinoma Stage T3N0M0. Percentage of weight loss was 4% within 1 month with loss of appetite and diarrhea. He underwent an elective laparoscopic anterior resection with covering ileostomy but developed ileus secondary to peritonitis and hospital-acquired pneumonia. An exploratory laparotomy was done the day after which revealed a perforation. Perforated bowel was then resected away and the stoma was refashioned. Total parenteral nutrition was initiated first with close monitoring of ileostomy output. Subsequently, nasogastric (NG) feeding with standard diabetic formula was started concurrently and parenteral nutrition gradually weaned off

How to cite this article:

Ho CY, Ahmad AF, Woo SS, Selvarajoo T, Jamhuri N, Kahairudin Z. Integrate Partial Hydrolyzed Guar Gum in Post-operative Ileostomy Nutritional Management. J Med Res Innov. 2020;4(2):e000206. DOI: 10.32892/jmri.206

DOI: 10.32892/jmri.206

Publication history:

Received: 14-02-2020
Accepted: 14-05-2020
Published: 26-05-2020

Editor: Dr. Varshil Mehta

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Funding: NIL

Conflict of Interest: NIL



after 60% energy requirement was achieved. After commencement of NG feeding, stoma output increased in trend although anti-motility and anti-secretory medications were optimized. PHGG was added into each feeding and it showed a positive effect in stoma output's volume and consistency. Patient B, a 66-year-old male with comorbid of diabetic mellitus, hypertension, and cerebrovascular accident, was diagnosed for a low rectal adenocarcinoma Stage T3N0M0. He underwent a neoadjuvant pelvic radiotherapy (long course of 5 weeks). Percentage of weight loss was 4.2% before surgery. Subsequently, he had an elective anterior resection with covering ileostomy which was fashioned 15 cm from the ileocecal junction. He was started with a clear fluid 6 h post-operative, followed by high-protein high calories diabetic low fiber non-caffeine diet on day 1 post-operative. After initiation of oral feeding, stoma output was increasing despite anti-motility and anti-secretory medications optimized. Thereafter, PHGG was added into his oral nutritional supplement and thereafter volume and consistency of stoma output improved.

After integrating PHGG into nutritional management, ileostomy stoma output was improved and consistency of output is normalized as Figure 1. Patients' total daily energy [Figure 2] and protein intake [Figure 3] were increasing in trend.

Discussion

Ileostomy, a type of stoma where part of the ileum, is used for diversion in colorectal surgery. Nutritional-related complications vary between types of

the stoma.^[4] Since the function of the colon is to reabsorb fluids and electrolytes, ileostomy patients would experience malabsorption of nutrients and high or/and watery output.^[5-7] Definition of high-output stoma varies and is usually considered as output >1.5 L/day.^[2,4-6,8] Persistent high stoma output without proper management could cause dehydration, depletion of electrolytes, acute renal injury, and malnutrition.^[9] The risk of nutrient malabsorption and malnutrition would be greater with a shorter gastrointestinal length.^[4,10]

Patients with ileostomy faced a greater risk of nutritional-related complication and require more intensive nutritional management.^[11] To prevent nutritional depletion, post-operative colorectal patients with ileostomy were prescribed with a high-protein high calories normal diet,^[6,12] insoluble fiber restriction,^[2,8,10] oral rehydration salts, and oral fluid restriction.^[1,8] Besides, table salt,^[8] starchy carbohydrate, and gelatine containing food to increase the consistency^[13] as well as avoidance of caffeinated drinks and hypo/hyperosmolar drinks to reduce osmotic diarrhea.^[14] Artificial nutritional support, either enteral or parenteral, might be required for those patients with limited length of remaining small intestine (<200 cm).^[12]

PHGG, a water-soluble polysaccharide and ability to form hydrogen bonds with water molecules and act as a thickener and stabilizer,^[15] has been demonstrated PHGG reduced the incidence of diarrhea in septic patients receiving total enteral nutrition and improved the symptoms of irritable bowel syndrome.^[3,16] There was a case report demonstrated similar findings with our current finding, whereby PHGG reduced the high stoma (ileostomy) output which was induced

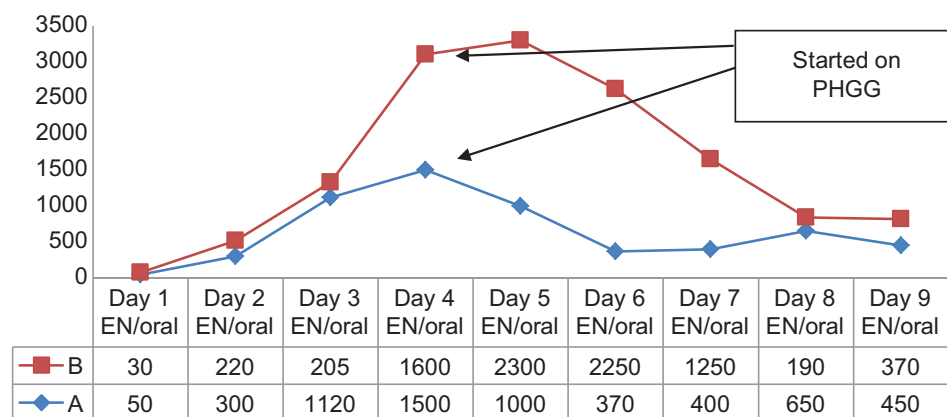


Figure 1: Daily ileostomy stoma output trend



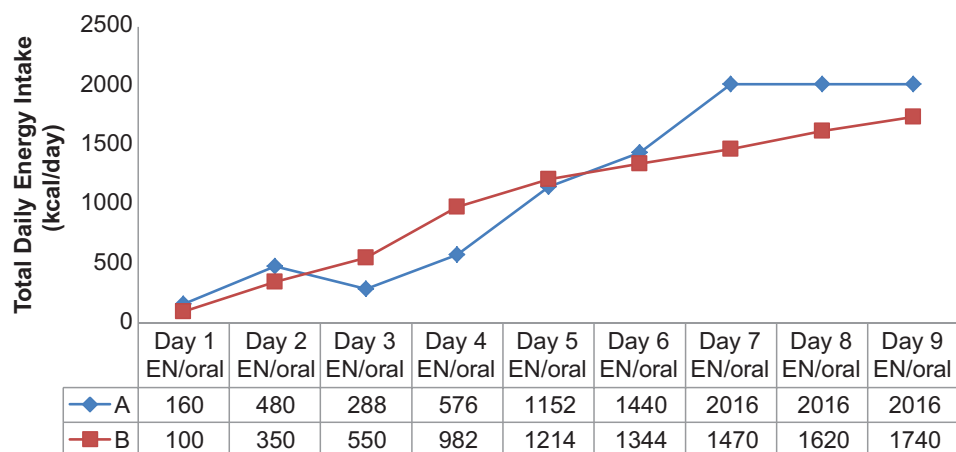


Figure 2: Total daily energy intake

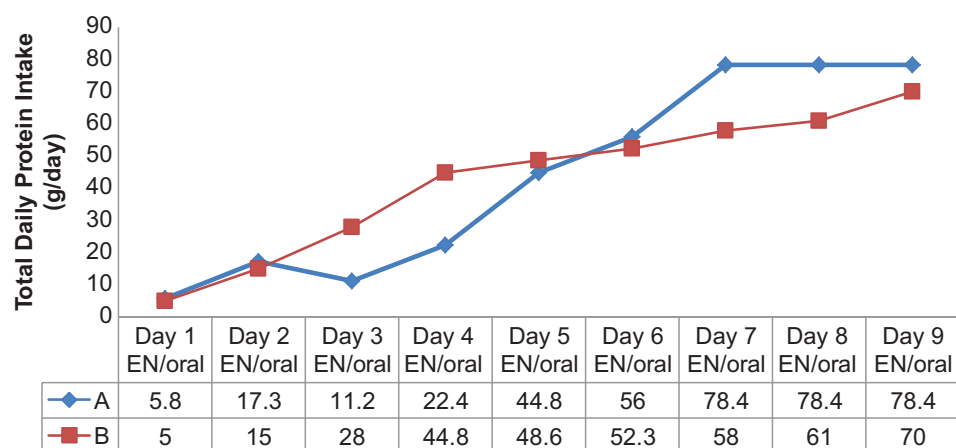


Figure 3: Total daily protein intake

by chemotherapy.^[17] Guar gum is categorized as dichotomous feature soluble fiber stool normalizing effect. It is able to soften the hard stool with increasing biomass frequency in constipation and firm the watery stool with decreasing biomass frequency in diarrhea.^[18] The current case report revealed that PHGG improved the consistency and volume of the ileostomy output and prevent complications triggered by the high stoma output. This case report intends to strengthen a shift in the conventional clinical management but these findings might not be served as shreds of evidence for the whole population.

Conclusion

Nutritional management is crucial in post-operative ileostomy case to prevent complications of

high stoma output and malnutrition. The PHGG incorporation in the post-operative nutritional management for ileostomy was showed positive outcomes in consistency and volume of stoma output, and total daily energy and protein intake. We hope this case series can be used as an example of the impact of the integration of PHGG in the nutritional management of post-operative ileostomy patients.

Authors' Contributions

Conceptualization, methodology, formal analysis, investigation, resources, data curation, visualization, and writing original draft preparation, HCY; validation, HCY; writing – review and editing, HCY, WSS, TS, NJ, and ZK; and supervision, AF. All authors read and approved the final manuscript.



Acknowledgments

We would like to thank the Director-General of the Health Ministry of Malaysia for permission to publish this article.

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